KATHOLIEKE
UNIVERSITEIT
LEUVEN

DEPARTEMENT TOEGEPASTE ECONOMISCHE WETENSCHAPPEN

RESEARCH REPORT 0124

**THE GLASS CEILING FOR REWARDS:
HOW IMPORTANT IS GENDER IN EXPLAINING
DIFFERENCES IN EARNINGS?**

by
A. GEVERS
L. SELS
B. OVERLAET

D/2001/2376/24

The glass ceiling for rewards:
How important is gender in explaining differences in earnings?

Ann Gevers[1], Luc Sels[2] & Bert Overlaet[3]

Abstract

Women have made enormous gains in the past few decades, both in education and in the workplace. More women are attending and graduating from university than in the past. They are also moving into professions traditionally dominated by men. However, a gender earnings gap is still evident. Several studies have demonstrated the existence of gender wage differentials that can or cannot be explained either by productivity-related characteristics, job and/or organization characteristics. The limitation of many of those studies is their focus on only one, maximum two group(s) of characteristics. This paper improves on previous studies of the explanation of the gender earnings gap: it combines the three groups of characteristics into one regression model. We test whether male and female earnings differ after controlling for individual, job-related and organizational features and study the contribution of several theoretical explanations of the gender wage gap. Neither did previous empirical research focus on wage discrimination at different hierarchical levels and at various stages of individuals' careers. This article answers these additional questions: Do earnings differences between men and women increase with hierarchical level? Are women faced with a pay handicap at the starting line of their career? Does the pay gap between men and women increase when work experience increases? The analysis uses data from the Salary survey, organized by the Department of Applied Economics and the job advertisement paper Vacature. This large-scale survey generates pay details on a total of more than 20500 white collar-workers (in private and public, profit as well as non-profit sectors).

---

[1] ANN GEVERS is doctoral assistant at the Department of Applied Economics of the KU Leuven. She is a member of the Organization Studies research group. Her research is mainly focused on the fairness and effectiveness of innovative reward systems. (ann.gevers@econ.kuleuven.ac.be)

[2] LUC SELS is associate professor at the Department of Applied Economics (Organization Studies) of the Katholieke Universiteit Leuven. His main research focuses on the explanation of differences in training investments between companies, the diffusion of new organization concepts, reward systems and flexibility of work. (luc.sels@econ.kuleuven.ac.be)

[3] BERT OVERLAET is associate professor at the Department of Applied Economics (Organization Studies) and personnel manager of the Katholieke Universiteit Leuven. Several of his publications deal with the fairness of wage differences, knowledge networks and change management in organizations. (bert.overlaet@econ.kuleuven.ac.be)

1. Introduction

Women have made enormous gains in the past few decades, both in education and in the workplace. More women are attending and graduating from university than in the past. They are also moving into professions traditionally dominated by men, although market segregation and a gender-earnings gap are still evident.

Several old and recent studies have demonstrated the existence of gender wage differentials that can or cannot be explained either by productivity-related characteristics, job or organization characteristics. The limitation of many of those studies is their focus on only one, maximum two group(s) of characteristics. Groshen (1991) and Blau (1977) did consider company features in the examination of the gender earnings gap, but did not examine whether differences in women's and men's human capital were behind the gender gaps found. Ashraf (1996) views the gender wage gap as the sum of differences owing to observed traits of men and women and unexplained differences, which are often attributed to discrimination. Graham et al. (2000) and Monk-Turner & Turner (2000) refer to human capital and employer characteristics in explaining gender differences in (starting) salaries. They did not take into account job features.

This article improves on previous studies of the explanation of the gender earnings gap: it combines the three groups of characteristics into one regression model. We test whether male and female earnings differ after controlling for individual, job-related and organizational features. We build our model progressively. We study the contribution of several theoretical explanations of the gender wage gap. Is the gender wage gap due to differences in the human capital of men and women? Are wages between men and women different because of job segmentation processes? Do men and women have different utility functions? Through a combination of individual, job and organization characteristics in one model, this paper seeks to refine prior estimates of the gender wage gap.

Neither did previous research focus on wage discrimination at different hierarchical levels and at various stages of individuals' careers. Authors have illustrated situations in which disadvantages women face relative to men intensify as they move up organizational hierarchies. Yet, they only studied patterns of promotion of men relative to women (Baxter & Wright, 2000). None of these studies examined increasing wage inequalities when moving up the hierarchical ladder. In the scientific literature we find evidence of differences in starting salaries between men and women (Graham et al., 2000; Duncan & Prus, 1992). However, we are unaware of a study providing robust statistical evidence of the increasing gender wage gap as careers progress. Graham et al. (2000) have only intuitively written that starters may be less susceptible to discriminatory forces with respect to pay.

Apart from refining prior estimates of the gender wage gap, this article answers these additional questions: Do earnings differences between men and women increase or decrease with hierarchical level? Are women faced with a pay handicap at the starting line of their career? Does the pay gap between men and women increase or decrease when work experience increases?

The analysis uses data from a Salary Survey, organized by the Department of Applied Economics of the KU Leuven and the job advertisement paper Vacature. It is a large-scale survey, which generates pay details on a total of more than 20500 white collar-workers (in private and public, profit as well as non-profit sectors).

The next section of the paper briefly outlines the methodology. The regression model is then explained in which individual, job-related and organizational pay determinants are included stepwise. In section four we run separate regressions for individuals from different hierarchical levels and report the differences in the gender coefficients. In a fifth section we compare the gender wage gap among two groups of respondents: one group that just entered the labor market and another group that already has between 15 and 25 years of work experience. We finish this paper with a summary of the main results.

2. Survey design

Several attempts have been made in the past to gain an insight into pay levels using random samples. These attempts usually generated a very low response. Moreover, it is striking that in many surveys the item non-response to pay-related questions is extremely high. This means that until recently the only source of data on earnings available in Belgium was those produced by the National Institute for Statistics. However, these data are subject to limitations, since companies with fewer than ten employees and organizations from extremely important sectors such as health care, education, government administration and not-for-profit are excluded. Moreover, these databases do not lend themselves to explanatory analyses, since they contain no information on the most essential person and job-related pay determinants.

For these reasons we deliberately opted to abandon the random sample approach (which would anyway have been limited due to cost considerations). The survey, which forms the basis for this paper, was distributed via the job advertisement paper *Vacature*, which has a very high circulation among all hierarchical and educational levels of white-collar workers. It produced the very high response of 20510 valid measurement points, but does create the problem that the sample reliability is almost impossible to determine. That clearly limits the scope for statistical generalization (Sels et al., 2000). However, this limitation applies to all employee-based (non-administrative) wage surveys. The fact that a random sample was not used does not mean that no effort was made to define clearly the survey population or the empirical field of validity when building the Salary Survey. Blue-collar workers are excluded from this population. The results relate solely to white-collars (including all ranks of management). Part-time workers are also ruled out. The analyses concentrate on full-time employment in order to achieve a certain standardization of working hours.

One intervention was made in order to improve the fit between the distributions of sample and population: the systematic re-weighting of the salary data. Not all groups in the labor force participated in the Salary Survey to an equal extent. Certain groups, such as the more highly educated, were over-represented. The salary data generated by the survey were therefore re-weighted on the basis of 'educational level'. This was

done using the program Weight 2.1 for Windows (Hajnal, 1995), a program for re-weighting samples on the basis of population statistics. The re-weighting allows the following important question to be answered: Suppose that the educational level of the respondents was identical to that of the wage-earning labor force, how would the pay differentials then look? However, we have to acknowledge that this re-weighting cannot neutralize problems of self-selection (Sels et al., 2000). Self-selection can for example imply that someone who considers himself successful is more inclined to report that success through participation in this type of survey.

A final methodological note relates to the precise meaning of the term 'pay' in this paper. By 'pay' we understand remuneration for labor, formed in an employment relationship with an employer. The independent variable in the analyses is always the natural logarithm of the gross monthly pay. The *gross pay* is the basic pay of the employee, before any fiscal or social security deductions. This amount not only includes the hours of work performed, but also the hours of absence during illness or holiday, for which the employee retains the right to normal pay. It also includes overtime pay, as well as an estimate in monetary terms of various fringe benefits. Premiums, incentives, bonuses, commission and similar income items are also included in this amount.

3. Male-female wage differentials

Before testing different explanations for the wage gap, we firstly compute the magnitude of the wage differential between men and women. Since other variables are not kept under control, we simply compare the average and median wages of men and women in our sample. Table 1 shows the wage gap between men and women, in total and for each hierarchical level.

Table 1: Gross monthly wages of men and women (in EURO)

	Median		Mean		
	Women	Men	Women	Men	W/M
Total	2127	2727	2319	3039	0.763
Operational staff	1860	2180	1988	2301	0.864
Professionals	2346	2670	2466	2826	0.872
Management	2851	3559	3091	3877	0.797

We defined three hierarchical levels: operational staff, professionals and management. The management level consists of the heads of the corporate departments who report directly to the general manager, and the managers who are in charge of implementation but do not report directly to the general director. Professionals are employees in staff departments or staff positions (also professors and consultants belong to this category). Finally, operational staff is understood as workers who carry out a clearly defined task in a subordinate role.

Table 1 clearly shows that women earn less, on average, than men. The coefficient Women / Men (W/M) indicates that a woman's pay is about 76.3 % of a man's pay. Across the European Union and Norway, women's earnings are around 79 % of men's. Some 25 years after the adoption of the EU Equal Pay Directive, the wage gap between women and men still averages some 21 % across the EU (plus Norway) (European Foundation for the Improvement of Living and Working Conditions, 2001). This foundation also presents figures for Belgium: female white-collar workers earn 71.7 % of male white-collar workers. The wage gap between men and women is large at all hierarchical levels, although the gap increases when climbing up the

hierarchical stairs. While the wage differentials at operational and professional level are alike, female managers, however, earn much less than their male colleagues. When we compare these figures with the 0.72 median female-male salary ratio for managerial and professional specialty jobs in the U.S. economy, it seems that our female-male salary ratios are higher (Graham et al., 2000).

In what follows we take a closer look on the gender wage gap and its explanations. In order to assess the relative importance of gender on pay differentials, we make use of linear regression, in which the natural logarithm of the gross monthly pay will serve as dependent variable. Through inclusion of several variables into the model we try to test some hypotheses. In 3.1 we test whether wage differences between men and women are due to differences in human capital. Can differences in human capital factors such as educational level and work experience explain the wage gap between men and women? In 3.2 we include job features into the model. The second hypothesis states that men and women, with the same human capital, who work in similar jobs, earn the same. In 3.3 we complete our model by including two organizational features. We test whether the wage gap between men and women will disappear after controlling for human capital, job *and* organizational characteristics.

Model I	**Model II**	**Model III**
1. Educational level	1. Educational level	1. Educational level
2. Work experience	2. Work experience	2. Work experience
3. Gender	3. **Gender**	3. **Gender**
	4. Hierarchical level	4. Hierarchical level
	5. Functional domain	5. Functional domain
	6. Number of subordinates	6. Number of subordinates
	7. Size of budget managed	7. Size of budget managed
	8. Responsibility in the job	8. Responsibility in the job
	9. Job autonomy	9. Job autonomy
	10. Complexity of the job	10. Complexity of the job
		11. Sector of employment
		12. Size of the organization

3.1 Human-capital explanation of male-female wage differentials

The human capital theory is known as a competitive model. This model states that wage differentials are explained by differences in the supply side of the market, namely differences in worker productivity, and particularly by differences in level of formal education, cognitive skill, labor market experience, and on-the-job training. It is the combination of factors such as these that comprises an individual's level of human capital (Graham et al., 2000). It refers to the qualities the individual brings to the workplace. In the standard wage function of the human capital theory, wage differences are mainly explained on the basis of work experience (Duncan & Hoffman, 1978; Holzer, 1990; Strober, 1990; Williams, 1991) and educational level (Strober, 1990; Nollen & Gaertner, 1991; Mincer, 1993; Weiss, 1995).

If the educational level of women would be lower on average and if they would have less work experience than men, then it is possible that differences in human capital can help explain differences in wages between men and women. Before looking at the regression analysis, we shortly examined whether there exist differences in educational level between men and women. The following table shows the number of women and men in the Belgian labor population having a particular educational level. It seems that relatively more men than women have a university degree or a degree of higher education ≥ 4 years. But also more men than women have only a degree of secondary education or lower. On average, men and women probably have the same quantity of education.

Table 2: Number of working men and women with different educational levels in Belgium

	Men	Women
Secondary education or lower	1635810 (72.05%)	976326 (61.52%)
Higher education < 4 years	267538 (11.78%)	392809 (24.75%)
Higher education ≥ 4 years	114151 (5.03%)	70485 (4.44%)
University	252885 (11.14%)	147458 (9.29%)
Total of working population	2270384 (100%)	1587078 (100%)

Source: Labor force survey - N.I.S. (1999)

An important question is whether the detected wage gap between men and women remains after controlling for differences in educational level and work experience. Our first hypothesis states: **men and women are paid differently, but this wage gap is a reflection of differences in their human capital, caused by differences in educational level and work experience**. In other words, men and women with the same amount of work experience and the same educational level are equally paid.

We test this reasoning through a relatively simple linear regression model, in which the natural logarithm of the gross monthly pay will serve as dependent variable. As independent variables we include:

- Highest educational level reached – secondary education or lower is used as reference category.
- Number of years of work experience – this variable is included both linearly and quadratically in order to test whether the relationship between wages and work experience is linear, concave or convex.
- Gender (0 = man; 1 = woman).

Table 3: Linear regression with the natural logarithm of the gross monthly wage as dependent variable

	Parameter estimate after logarithmic transformation		Exponentiated parameter estimate	
	Unstandardized	Standardized	Unstandardized	Standardized
Intercept	11.083**	0	1613	1
Work experience	.039**	.991	1.039	2.694
Work experience²	-.0006**	-.535	0.999	0.586
Degree of higher education outside university (< 4 years)	.103**	.123	1.108	1.131
Degree of higher education outside university (≥ 4 years)	.254**	.225	1.289	1.252
University degree	.378**	.443	1.459	1.557
Gender (man = 0; woman = 1)	-.187**	-.221	0.829	0.802
R^2 = .408; Adj. R^2 = .408	** $p < 0.001$			

The explaining power of these classic 'human capital'-determinants, educational level and work experience, is rather large. Together with gender, they explain 40.8 % of the total variance in wages.

Our analysis proves the importance of *educational level* as a determinant of pay level. The results show that a white-collar employee, who graduated at university, will be paid 45.9 % more on average than an employee with a secondary (or even lower) educational background. Work experience and gender are kept under control. Part of the reason why those who are better educated earn more than those who are not stems from the skills training and consequent productivity increase derived from their education. But those who are better educated earn more also because of their relatively higher class background and because their education gives them entry to job ladders containing the more desirable and higher-paying jobs (Strober, 1990). The high impact of education on wages does not necessarily confirm the human capital theory. There exist many theories that do not explain the relationship between education and wages by referring to increased productivity, but as a result of other behavioral relationships. One example of such an alternative theory is the signaling model (Strober, 1990; Arrow, 1973; Spence, 1974). According to this model, employers believe that higher productivity is a function not of the skills that workers learned in school, but rather of the amount of capital that employees have to work with, the amount and type of on-the-job training that they receive and, the ability of the worker to absorb training. Education, according to Thurow (1975), is used by employers as a signal of trainability.

The human capital theory also explains pay differentials on the basis of *work experience*. It is argued that the productivity of a worker or the value of his/her human capital increases with work experience. The amount of work experience is often considered as a proxy for an unobservable investment in on-the-job training (Duncan & Hofmann, 1978). Some of the positive relationship between work experience and earnings comes from employer-designed pay schemes aimed at reducing employee turnover and shirking. And some derives from the fact that workers with high seniority may be better workers to begin with, are in better jobs, or may be in jobs

where the job requirements and their own characteristics are particularly well-matched (Strober, 1990). Our analysis shows indeed that wages rise with work experience, a result that is consistent with earlier research (Hartog, 1986; Pfeffer & Davis-Blake, 1990). Experience, however, also ages. As a consequence, pay rises due to increasing work experience reduce over time. The relationship between wages and work experience is concave.

The most important conclusion from the previous analysis is that *gender* explains wage differences in a statistically significant way. Women earn, ceteris paribus, 17.1 % ((1 - 0.829) * 100) less than men. We have not taken into account job-related and organization characteristics. As we will see in the following part, men and women are not equally represented in all jobs and industries.

Human capital theory interprets the gender earnings differential as stemming from women's own choices. Women choose to obtain less education of the type that has a high pay-off (cf. infra). Holding the type of education constant, they choose to obtain jobs that have low levels of on-the-job training. And they choose to withdraw from the labor force periodically in order to raise children. To try to increase the female/male earnings ratio through public policy would, in the view of the human capital theorists, interfere with the efficient allocation of resources now being performed by labor markets. They follow the reasoning that in a perfect world pay is determined by merit, which in turn is defined by variables, such as formal education, cognitive skill, labor market experience, and on-the-job training (Polachek, 1987).

Women's expected discontinuous labor force participation leads them not to invest in much on the job-training, because they do not expect to be in the labor market long enough for such training to pay off. It also reduces the incentives of employers to invest in furthering women's skills in the marketplace. Women's actual discontinuous labor force participation causes their labor force skills to depreciate (Mincer, 1993). This is only one, and not even the most obvious, explanation for the wage gap between men and women (Sels et al., 2000).

In our analysis, we observe that a wage gap between men and women still exists after controlling for work experience and educational level. Women with the same amount of work experience and the same educational level than men are still paid 17.1% less. We have to reject the first hypothesis. In other words earnings differences between men and women cannot be fully explained by the classic human capital factors such as educational level and work experience. Therefore we will extend our model with some job-related variables (part 3.2). Nevertheless, the inclusion of the standard human capital variables has reduced the gender wage gap with approximately 6 percent. We started our analyses with an observed gender wage differential of 23.7 %.

3.2 Wage gap between men and women: explained by differences in jobs?

In the previous part we concluded that a wage gap is still present after controlling for work experience and educational level. A second potential explanation for the wage gap concentrates on differences in jobs exercised by women and men. Several authors mention "segmentation processes" in which women are excluded from higher-paying jobs and are crowded into those that pay less (Strober, 1990; Solberg & Laughlin, 1995; Chauvin & Ash, 1994).

If women are indeed more frequently found in relatively lower-paid administrative jobs and are less represented in well-paid management and professional jobs, then it is possible that differences in job characteristics can help explain differences in wages between men and women. We formulate the following hypothesis: **the wage gap between men and women will disappear if we include into our regression model, not only the human capital factors, but also job-related characteristics.**

Our second model will be the same as our first model, only extended with job-related characteristics:

- Hierarchical level: management, professionals, and operational staff (= reference category).
- Functional domain (general management, marketing, engineering, R&D, etc., with after-sales service as reference category).
- Number of subordinates (1-5; 6-15; 16-30; more than 30; the group without subordinates is the reference category).
- Size of budget managed (budget managed of EUR 25000 or less; budget of more than EUR 25000; employees who do not manage a budget form the reference category).
- Responsibility in the job (ten-point scale on the basis of factor analysis; see appendix).
- Complexity of the job (ten-point scale on the basis of factor analysis; see appendix).
- Job autonomy (ten-point scale on the basis of factor analysis; see appendix).

Table 4: Linear regression (natural logarithm of gross monthly wage = dependent variable)

	Parameter estimate after logarithmic transformation		Exponentiated parameter estimate	
	Unstandardized	Standardized	Unstandardized	Standardized
Intercept	10.836**	0	1260	1
Work experience Work experience²	.0288** -.0003**	.714 -.322	1.029 0.999	2.042 0.725
Degree of higher education outside university (< 4 years)	.071**	.085	1.074	1.089
Degree of higher education outside university (≥ 4 years)	.154**	.137	1.166	1.147
University degree	.247**	.290	1.280	1.336
Gender (man = 0; woman = 1)	-.094**	-.111	0.910	0.895
Professional	.0922**	.105	1.097	1.111
Management	.227**	.273	1.255	1.314
Information technology	.124**	.092	1.132	1.096
R & D	.109**	.059	1.115	1.061
General management	.104**	.078	1.109	1.081
Engineering	.071**	.034	1.074	1.035
Marketing	.067**	.034	1.069	1.035
Sales	.053**	.048	1.054	1.049
Finance / bookkeeping	.047**	.033	1.048	1.034
Technical support	.034*	.023	1.034	1.023
Operations	.029*	.024	1.029	1.024
Logistics, HRM, Administration	(n.s.)			
Budget managed ≤ EUR 25000	.032**	.026	1.033	1.026
Budget of more than EUR 25000	.118**	.098	1.125	1.103
1 – 5 subordinate(s)	.016*	.018	1.016	1.018
6 - 15 subordinates	.045**	.038	1.046	1.039
16 - 30 subordinates	.044**	.024	1.045	1.024
More than 30 subordinates	.089**	.058	1.093	1.060
Complexity of the job	.017**	.075	1.017	1.078
Responsibility	.002 (n.s.)	.012	1.002	1.012
Job autonomy	.009**	.046	1.009	1.047
R^2 = .558; Adj. R^2 = .557	** p < 0.001; * p < 0.01; n.s. not significant			

After inclusion of the job-related factors, the explaining power of the regression model increases from 40.8 % (model 1) to 55.8 %. This rise in explaining power is probably due to the extensive number of job-related characteristics used. Most research does only take into account a limited number of job-related factors, e.g. hierarchical level (Rosenbaum, 1980; Hartog, 1986).

Our model distinguishes between three *hierarchical levels*. All things being equal, the gross monthly pay of professionals is, on average, 9.7% higher than that of operational staff. Managers earn on average 25.5% more than operational staff. Pay differences occur not only between hierarchical levels. The *functional domain* to which a job belongs can also help determine the employee's monthly pay. The table shows that wages in information technology are on average 13.2 % higher than those in after-sales, our reference category. Employers in R&D are paid, ceteris paribus, 11.5 % more than their colleagues of after-sales. In general, the pay differential between functional domains is rather limited. In terms of remuneration, it makes little difference whether an employee builds a career in personnel management or in administration or logistics, for example. The *number of subordinates* and *the size of the budget managed* are two job-related characteristics that seem to have an additional impact on pay levels if we control for differences in hierarchical level.

The factors '*responsibility in the job*', '*autonomy*' and '*degree of complexity*' are the results of a personal assessment by the respondents. It can be deduced from the analysis that a high degree of autonomy and complexity are accompanied (all things being equal) by significant higher pay.

The most important conclusion from the second regression analysis is that gender still has a statistically significant impact on wages, even after controlling for human capital factors and job-related characteristics. We have to reject our second hypothesis. The wage gap between men and women nevertheless decreases from 17.1% (model 1) to 9% if job-related characteristics are included. In other words, a substantial part of the wage gap between men and women can be explained by differences in men's and women's jobs. These jobs probably differ with respect to

hierarchical level, functional domain, job autonomy and complexity, number of subordinates, and the size of the budget managed. The system of job grading, which is related to hierarchical levels, is also considered as having a potential to affect gender pay inequalities in other research (Rubery et al., 1997).

Our results show that men and women are positioned, to a certain extent, in different jobs. Solberg and Lauglin (1995) use the term "crowding" to indicate that women are positioned in lower-paid jobs. One possible explanation for this phenomenon is segmentation. Segmentation should be seen as a collective name for processes, which lead to a limitation of the competition for jobs. This means that certain (types) of workers have more difficulty in gaining access to certain (types) of jobs (with a given pay level), because employers select candidates on the basis of individual or group characteristics (Glebbeek, 1993). The selection criteria adopted may be applied so systematically that they result in a segmentation of *workers*, a segmentation according to the type of jobs for which they are eligible. It is not only workers but also *jobs* that are segmented, by the types of position for which they form a good springboard. This segmentation of jobs gives rise to career paths or job chains.

Segmentation of workers means that individual or group characteristics determine which jobs these workers can attain. Processes of statistical discrimination can play a particular role here. Statistical discrimination occurs primarily where employers have imperfect information about the productivity of candidate employees and therefore use characteristics of the employee as a source of information about his/her productivity (Davidson & Burke, 1994). It is thus possible that employers assess the 'attraction' of women lower during recruitment and when determining pay levels, for example because they expect women to interrupt their careers more frequently (Graham et al., 2000). Reference is made to statistical discrimination among other things in the 'labor queue' theory. Selection occurs not so much on the basis of an assessment of individual qualities, but on the basis of group averages (Solberg & Laughlin, 1995). This gives rise to a 'labor queue' which can vary per job group, but which nevertheless means that people with a lower level of education, women, members of ethnic minorities, etc. are often at the end of the queue when it comes to

jobs with the highest pay and/or the best career prospects. This segmentation of female workers can be reinforced by an existing *segmentation of jobs*. For example, statistical discrimination at the 'entry level' may mean that women more frequently end up in positions which form part of a less promising job chain or career path and which in this sense provide a less resilient springboard to higher and better-paid positions (Benschop, 1996).

It is possible that segmentation processes partly offer an explanation for the wage gap. Nevertheless, the question remains whether women perform certain jobs because they are excluded from better-paid jobs with more career prospects, or because they prefer to do those jobs. Differences in preferences for certain types of jobs can also account for a substantial portion of the earnings gap between men and women. It is very difficult, if not impossible, to determine the degree to which these preferences are shaped by discrimination (Gunderson, 1989). In other words, is crowding caused by a discriminatory conspiracy or by individual worker choice?

Besides, we cannot overemphasize the impact of job characteristics on the gender wage gap since differences between men's and women's wages still exist in this second model. In a following part we will investigate whether the sector of employment and the size of the employer can contribute to the explanation of the gender wage gap.

3.3 Do men and women work in different organizations?

Research into the determinants of pay levels has long ignored characteristics on the demand side of the labor market. Nevertheless, researchers who did look at the demand-side factors proved that different employers pay employees with comparable human capital different amounts (Groshen, 1991; Blau, 1977; Gunderson, 1989).

The wage gap between men and women can be partly due to the fact that women are more represented in low-paying organizations (Fields & Wolff, 1995). Under those circumstances, we cannot speak of direct discrimination, but rather of segmentation

between employers on the labor market. Since our Salary Survey does not provide many data on the characteristics of the employer, we cannot conclude much about the importance of the demand-side factors in explaining the gender wage gap. We add the variables "size of the organization" and "sector of employment" into our regression model.

Earlier research (Hodson & England, 1986; Groshen, 1991) already stipulated that a large part of the gender wage gap resulted from differences in the distribution of employed men and women across industries. Roos (1981), in contrast, found that gender differences in employment across industries explained only 0.4 % of the overall wage gap. The following table shows the number of men and women working in diverse sectors in Belgium. The table is limited to white-collar workers, as is our sample.

Table 5: Number of men and women working in diverse sectors in Belgium

	Men	**Women**
Hotel and catering	5155	6052
Public services	6332	9034
Retail	133261	175272
Telecommunication	8720	4855
Transport	23575	22418
Services to companies	72490	89461
Textile	4592	4844
Health care	33182	140031
Building industry	16464	8214
Wood and paper	12701	10179
Food industry	14202	15671
Education	441254	596307
Metal industry	56972	16244
Information technology	25607	8850

Banks and insurance	65040	57690
Chemical industry	26985	12155
Socio-cultural sector	12362	9050

Source: Rijksdienst voor de Sociale Zekerheid (Number of private sector employers and employees, registrated in Social Security at 31/03/00), Openbare Instellingen van de Soc. Zekerheid

It seems that in Belgium women are over-represented in health care, service sectors (retail, services to companies, etc.), and education. Typically male industries are information technology, the metal and the chemical industry. Women and men study different fields in school or at university: women often end up as teachers, nurses and office workers, men as engineers or IT specialists. Figures from the KU Leuven indeed show that students in technical education (e.g., engineering and information technology) are predominantly male. Women are more represented in arts, pedagogy, psychology, and the medical sciences.

With respect to the size of the organization, we looked up the number of men and women employed in organizations of different size (table 6). In Belgium more women than men are employed in small companies with 50 employees or less. Other differences are small.

Table 6: Number of men and women working in organizations of different size in Belgium

	Men	Women
50 employees or less	198333	268158
50 < employees ≤ 200	104607	95973
200 < employees ≤ 500	72361	70074
500 < employees ≤ 1000	44898	51518
More than 1000 employees	143161	133443

Source: Rijksdienst voor de Sociale Zekerheid (Number of private sector employers and employees, registrated in Social Security at 31/03/00), Openbare Instellingen van de Soc. Zekerheid

As far as we know, research about the distribution of men and women over firms of different size is rare. We only found one hypothesis, formulated by Fields & Wolff (1995), that states: "there may be different distributions of male and female workers over firms within industries, with larger firms paying higher wages and relatively fewer female workers in the large firms".

In the following regression model, we test whether **the wage gap between men and women disappears after including human capital, job-related *and* organizational determinants** (hypothesis 3).

Table 7: Linear regression with the natural logarithm of the gross monthly wage as dependent variable

	Parameter estimate after logarithmic transformation		Exponentiated parameter estimate	
	Unstandardized	Standardized	Unstandardized	Standardized
Intercept	10.635**	0	1031	1
Work experience Work experience²	.0285** -.0004**	.707 -.310	1.029 0.999	2.028 0.733
Degree of higher education outside university (< 4 years)	.071**	.084	1.073	1.088
Degree of higher education outside university (≥ 4 years)	.145**	.129	1.156	1.138
University degree	.241**	.283	1.273	1.327
Gender (man = 0; woman = 1)	-.084**	-.099	0.919	0.906
Professional	.098**	.111	1.103	1.117
Management	.225**	.270	1.252	1.310
General management	.091**	.068	1.095	1.070
Information technology	.069**	.051	1.072	1.052
R & D	.054**	.029	1.055	1.029
Logistics, HRM, Administration, Marketing, Sales, Finance / bookkeeping, Technical support, Operations, Engineering	(n.s.)			
Budget managed ≤ EUR 25000	.028**	.023	1.028	1.023
Budget of more than EUR 25000	.108**	.089	1.114	1.093
1 – 5 subordinate(s)	.022**	.025	1.023	1.025
6 – 15 subordinates	.042**	.035	1.042	1.036
16 - 30 subordinates	.042**	.023	1.043	1.023
More than 30 subordinates	.090**	.058	1.094	1.060
Complexity of the job	.015**	.064	1.015	1.066
Responsibility	.004**	.024	1.004	1.024
Job autonomy	.010**	.050	1.010	1.051
At least 50 employees	.057**	.058	1.060	1.060
At least 200 employees	.073**	.063	1.076	1.065
At least 500 employees	.087**	.064	1.091	1.066
At least 1000 employees	.113**	.141	1.120	1.151

Pharmaceutical sector	.292**	.117	1.339	1.124
Chemical industry	.275**	.176	1.317	1.192
Telecommunication	.216**	.120	1.241	1.128
Information technology	.200**	.160	1.221	1.174
Banks and insurance	.183**	.143	1.201	1.154
Metal industry	.177**	.131	1.194	1.140
Food industry	.173**	.078	1.189	1.081
Media and marketing sector	.169**	.071	1.184	1.074
Textile	.167**	.053	1.182	1.054
Transport	.164**	.071	1.178	1.074
Building industry	.141**	.058	1.151	1.060
Wood and paper	.141**	.047	1.151	1.048
Services to companies	.134**	.099	1.143	1.104
Retail	.124**	.075	1.132	1.078
Education	.118**	.076	1.125	1.079
Health care	.117**	.070	1.124	1.073
Public services	.060**	.046	1.061	1.047
Hotel and catering	(n.s.)			
R^2 = .597; Adj. R^2 = .596	** p < 0.001; n.s. not significant			

This full model, consisting of human capital, job-related and company-related variables, explains almost 60 % of the total variance in wages. With respect to *industry* as a wage determinant, we may conclude that there are strong significant differences between industry wages, even after controlling for important determinants such as gender, work experience, level of education, etc. (in other words after controlling for compositional effects). In the pay hierarchy (highest pay to lowest), the top five positions are taken by the pharmaceutical industry, the chemical industry, telecommunication, information technology, and banks and insurance companies. The socio-cultural sector was chosen as the reference category. Wages in the pharmaceutical industry are on average 33.91 % higher than those in the socio-cultural sector. The picture of strong sectoral pay differentiation in Belgium is confirmed in international comparisons (Van der Wiel, 1999). Many barriers can reduce the capacity or willingness of employees to transfer to better-paying sectors. The result then is market segregation (Sels et al., 2000).

The regression analysis also teaches us that large companies, all things being equal, pay better. The gross monthly pay in companies with at least 500 employees, for example, is 24.32 % higher than in companies with less than 50 workers (1.059 * 1.076 * 1.091). Several studies report this positive effect of *company size* on wages (Brown & Medoff, 1989; Springael et al., 1998).

One limitation of our regression model is that we cannot measure gender wage differentials within companies. The only organizational determinants included in the analysis are company size and sector of employment. Wage differences by gender, however, are much smaller within companies than between companies (Chauvin & Ash, 1994).

We nevertheless try to figure out how many men and women in our survey believe that gender wage differences exist in their company. The following table shows the results.

Table 8: Perceptions of wage differences between men and women in a similar job

	Yes, there are differences	No, there are no differences	Not applicable
Men	15.4 %	64.8 %	19.8 %
Women	30.2%	50.3%	19.5%

It appears that in our survey twice as much of the women get the impression that wages differ between sexes in their company. More than thirty percent of female respondents think that their male colleagues doing a similar job receive a wage that differs from theirs. Further analyses show that a large part of the women perceiving wage differences between sexes are employed in typically male industries (information technology, metal and chemical industry). However, this is no proof of larger wage differences in these sectors.

The previous regression model (table 7) shows that women are still paid 8.1 % less than men, if we control for individual factors, job-related and organizational characteristics. In other words: a woman with the same educational level and amount of work experience is paid 8.1% less than a man in the same functional domain, on the same hierarchical level, with the same number of subordinates and the same size of budget managed, performing an equally complex job, with a certain amount of autonomy and responsibility, for an equally large employer in the same sector. The wage gap has nevertheless diminished. We started our analyses with an observed gender wage gap of approximately 23 % (table 1). This difference falls, after including some human capital factors, to 17.1 % (table 3). When we take job differences into account, this gender wage gap further drops to 9 % (table 4). The full regression model shows that a wage difference of 8.1 % between men and women still exists, when human capital factors, job-related and organizational characteristics are kept constant. We are able to explain almost two thirds of the original wage difference between men and women through the integration of human capital, job-related and company-related variables in our regression model. The unexplained wage gap of 8.1 % can partly be due to discrimination. In order to be sure that the existing wage differential is attributable to labor market discrimination, it is necessary to remove all the effects of a wide range of wage-determining factors, including those that may reflect discrimination outside of the labor market (Gunderson, 1989). In our regression model, we have tried to consider as much relevant variables as possible. However, we cannot rule out the possibility that part of the unexplained gender wage gap is a proxy for the effects on wages of some omitted variables (e.g., household responsibilities).

4. Do male-female wage differences rise with hierarchical level?

The previous part still detected a wage difference between men and women of 8.1 %, after including human capital, job and organization characteristics. In this part we start from the glass ceiling hypothesis, stating that, not only it is more difficult for women than for men to be promoted up levels of authority hierarchies within workplaces, but also that the obstacles women face relative to men become greater as they move up the hierarchy (Baxter & Wright, 2000). We will translate this hypothesis into reward terminology. Our fourth hypothesis then becomes: **not only do women experience wage inequalities in general (cf. part 3), these wage inequalities increase as women move up the hierarchy**. In other words, the wage inequalities women face relative to men intensify as they move up organizational hierarchies.

In our model we defined three hierarchical levels. A first level consists of the heads of the corporate departments who report directly to the general manager, and the managers who are in charge of implementation but do not report directly to the general director. Professionals represent the second level. These are employees in staff departments or staff positions. Finally, operational staff is understood as workers who carry out a clearly defined task in a subordinate role, for example a bookkeeper who works under an administrative director.

We ran separate regression analyses for each hierarchical level and examined the gender coefficient. The following table shows the parameter estimates, as well as the fit of the model. A greater amount of the total variance is explained by the included individual, job-related and organizational variables in the highest hierarchical level case. This is consistent with the logic that wages on lower levels are often determined by collective (sectoral) agreements rather than by individual, job-related and organizational features.

Table 9: Comparison of gender parameter on three hierarchical levels

	R^2 (Adj R^2)	Gender parameter estimate after logarithmic transformation	Exponentiated gender parameter estimate
Regression with managers	.448 (.444)	-.101	.9039
Regression with professionals	.428 (.422)	-.0819	.9214
Regression with operational staff	.409 (.404)	-.0752	.9275

With respect to the gender coefficients, our models illustrate that the gender pay gap gets wider the higher one climbs on the hierarchical ladder. Female managers earn on average 9.61 % less than male managers. The average gross monthly wage of female professionals is 7.86 % smaller than that of male professionals. Finally, female members of the operational staff earn 7.25 % less than their male counterparts. We observe that the gender wage gap on the professional level does not differ much from that on the operational level. Wage inequalities between men and women especially increase on management level. Hypothesis 4 can be confirmed, but based on the results we prefer to formulate it differently: not only do women experience wage inequalities in general, these wage inequalities increase as women move up to management level.

Compensation is object of negotiation on higher hierarchical levels, especially management levels. While sectoral job classifications are often used as a basis for compensation on lower levels, this is rarely the case at management level (Seghers & van der Hallen, 1994). Senior and middle managers are outside collective bargaining coverage. Since pay levels at lower levels are mostly determined by collective (sectoral) agreements, there is less opportunity for pay inequalities for equal work. A possible explanation for the larger gender wage gap at management level is the dominancy of men in negotiations. A question often raised is: "Would women earn more if they bargained more like men"? The fact is that women tend to have lower pay aspirations than do men regardless of occupational field. Our Salary survey showed that wage aspirations of men are 5 % higher than those of women. Men expect a future pay level that is 25.659 % higher than their current pay level, while

women expect a future pay level that is 20.436 % higher. Lower wages emerge as one consequence of lower pay aspirations. Besides, women's lower pay aspirations may partly influence their initial wage offer. According to Stuhlmacher & Walters (1999), it is possible that a few hundred dollars more in wage is less important for women than forming and maintaining an interpersonal relationship. Women tend to make less counter offers (or less offensive counter offers) than men during pay negotiations. Men use more active negotiation tactics (asking for a larger salary than that offered). Women are more indirect in their self-promotion tactics (e.g. emphasizing their motivation to work hard). Gender stereotyping also results in the differential valuation of women and men by male negotiators: beliefs that women are willing to work for less pay or deserve less pay than men remain common. It appears that women have little control over some aspects of the pay negotiation such as negotiator bias with regard to the initial and final wage offer. Moreover, women are often not aware of what male peers earn or they compare themselves with other women colleagues that are also underpaid. So, this comparison will not reveal the top of the scale for wages at a similar rank (Rose & Danner, 1998).

Stuhlmacher & Walters (1999) argue that in wage negotiations, even a small gender difference in outcomes would be perpetuated through increases based on percentage of pay. This effect could be magnified if women are less effective than men in future pay negotiations. A small effect size in negotiation outcome could have substantial impact on promoting a gender-based wage differential in organizations. In the following part, where we examine the evolution of the gender earnings gap during careers, we will see that differences in starting wages have a continuous impact on later wages. In our regression model (part 3) we have considered the role played by demand side issues (e.g. job segmentation processes) and supply side issues (e.g. human capital, employee choices) in creating and maintaining the wage gap. Negotiator effectiveness is yet another supply side contribution to disparities in pay between men and women.

Apart from the impact of negotiation on the gender wage gap, we also mention the effect of promotions on the gender wage differential (cf. Booth et al., 1998). If men

and women would be promoted at roughly the same rate, the effect of these promotions on the growth of wages is likely to exacerbate the already large gender gap in wages. Men continue to gain wage increases from promotions that occurred 3 to 5 years before, while women do not. Promoted women often receive a one-off wage increase, but then find it hard to rise in the wage scales after promotion. Booth and others use the term 'sticky floors' to describe this situation.

5. The evolution of the gender wage gap during careers

Only a very limited number of studies focused on wage discrimination at various stages of individuals' careers. Gerhart (1990) compared gender differences in current and starting salaries in one single firm. Fuller & Schoenberger (1991) examined wages of female and male graduates with business degrees over the first five years of their career and found a widening gender gap. Graham et al. (2000) intuitively noted that starters are less susceptible to discriminatory forces with respect to pay. Rubery (1995) mentioned the increasing inequality between men and women over their working lives. Not much empirical evidence on the evolution of the gender wage gap during careers is available. We hope to fill this gap by comparing the gender wage gap among starters with the gender wage gap among employees with more work experience.

In this part we test two hypotheses: **The starting pay for women is not equal to the starting pay for men**, in other words, women are already faced with a pay handicap at the starting line (hypothesis 5). **The wage gap between men and women enlarges as careers progress** (hypothesis 6). In order to test these hypotheses we ran two similar regression models. In the first model we selected only those respondents with 5 years of work experience or less. We called this group the "starters". The second regression model focused on respondents having a work experience between 15 and 25 years. This group is named "experienced workers". The following table gives the gender parameter estimates, as well as the fit of the model.

Table 10: Comparison of gender parameter for starters and experienced workers

	R^2 (Adj R^2)	Gender parameter estimate after logarithmic transformation	Exponentiated gender parameter estimate
Regression with starters	.388 (.382)	-.0574	.9442
Regression with experienced workers	.504 (.498)	-.104	.9012

A greater amount of the total variance is explained by the included individual, job-related and organizational variables in the "experienced workers" case. It seems reasonable that job-related and organizational factors start to have an impact on wages after a few years of work. An interesting example is hierarchical level: almost no one enters the labor market in the role of general manager. The influence on wages of being a manager is felt only after some years (after someone is promoted to this level). The wage dispersion is smallest in entry-level jobs. The variables that predominantly explain wage differences in entry-level jobs are the individual factors, to a large extent the educational level.

In the category of respondents with 5 years of work experience or less, we observe that women earn 5.58% less than men. This difference rises up till 9.88% for workers with 15 to 25 years of work experience. These figures illustrate that women are faced with a pay handicap at the starting line, but moreover, they build up a disadvantage relative to men. The pay gap between men and women enlarges as careers progress. We accept hypotheses 5 and 6. Rubery (1995) argues that gender pay inequality has a life cycle dimension, by that she means the increasing inequality between men and women over their working lives. Women, who do not start out at the same pay level as men with comparable credentials, have to play catch-up for the rest of their careers (Brett & Stroh, 1999). Gender differences in starting pay can be quite consequential over time (Graham et al., 2000; Gerhart, 1990). This is because organizations' merit pay raises are often based upon current salary level, such that the lower the salary, the lower the raise. Since merit raises are added into base salary, an initial gender

difference is compounded over time. Additional penalties can result as workers progress in their careers, since incentive bonuses are often paid as a percent of salary. Besides, other organizations consider salary history in making offers, which would also magnify the impact of gender differences in starting salary.

Wage differences for women at the beginning of their career can again have several causes. It is possible that women choose fields of education that have a lower pay-off than typically male study domains (engineering, information technology, etc.) (Strober, 1990). Other explanations direct at discrimination (cf. supra: statistical discrimination).

Women also build up a pay disadvantage in comparison with men because of their periodic use of career interruptions (Strober, 1990). Career interruptions are thought to reduce women's wages relative to men's for at least three reasons (Albrecht et al., 1999). First, wages tend to rise with work experience (Mincer, 1993), and time spent away from work is experience foregone. Rubery et al. (1997) discuss the disadvantages of seniority-based pay for women due to their career interruptions. Swaffield (2000) argues that there is a lack of options for lower paid women with children to stay in the labor market due to the relative costs of childcare to their wage. This produces a vicious circle of low wages causing interruptions and interruptions causing low wages. Second, it is thought that, anticipating future work interruptions, women choose (or are assigned to) jobs with less potential for training. Finally, time out of the workforce appears to lead to a loss in subsequent earnings greater than can be explained solely by foregone experience: this is the result of skill atrophy or human capital depreciation. Albrecht et al. (1999), however, demonstrate that the influence of career interruption on pay development depends greatly on the nature of the interruption, and that the negative effect of interruptions on the development of pay is significantly stronger among men than among women.

Further arguments for the increasing wage gap as work experience rises are grounded in the fact that the pay of recent graduates may be more directly tied to market pay rates than the pay of workers employed by one firm for a number of years. The latter

may be more susceptible to non-market or discriminatory forces (Graham et al., 2000). Besides, women may have fewer employment alternatives at other firms several years into their careers, due to spousal constraints, or household responsibilities. Job applicants who have alternate job offers will have more bargaining power and will be more likely to negotiate, with an increased chance on a higher salary offer (Collins et al., 1998). If women indeed have fewer employment alternatives after a few years, they will probably not introduce negotiations.

Rubery (1995) proposes one solution to counteract the increasing inequality between men and women over their working lives. Performance-related pay could provide some compensation for discrimination in promotion between men and women. If a spin off from performance-related pay is a more systematic performance appraisal, women could benefit from less discrimination in the promotion system. More women will probably receive higher pay for their performance within the job category. Although this is the less favorable outcome than job promotion it could still be very important for individual women.

6. Concluding remarks

We have analyzed the gender wage gap using data from a salary survey, organized by the Department of Applied Economics of the KU Leuven and the job advertisement paper Vacature. In many ways we take a new approach to the analysis of the gender wage gap. We try to explain the gender wage gap by including productivity-related, job and organization characteristics in one model, while previous studies rather focus on one or two groups of characteristics. We also test whether the wage inequalities women face increase or decrease with hierarchical level and with work experience.

Firstly we examined whether male and female earnings still differed after controlling for individual, job-related and organizational characteristics. The regression results show that adjusting for both supply- and demand-side factors does not totally eliminate the pay differential favoring men. Women's earnings are, ceteris paribus, 8.1 % lower than those of men. Many alternative explanations for these pay differentials between men and women have seen the light. According to human capitalists, the gender wage differential is stemming from women's own choices. The human capital school expects that women will interrupt their careers more frequently, which causes their labor force skills to depreciate. The inclusion of the human capital or productivity-related variables has reduced the gender wage gap with approximately 6 percent, but a wage gap still exists after controlling for work experience and educational level. Another group of theories, applicable here, are the *segmentation theories*. Some groups of workers have more difficulty in gaining access to certain types of jobs, because employers select candidates on the basis of individual or group characteristics. Women are often at the end of a labor queue when it comes to jobs with the highest pay and/or the best career prospects. Women frequently end up, from the start, in positions, which form part of a less promising career path. These theories possibly offer an explanation for the wage gap, which decreases with 8 % after including job characteristics. Nevertheless, the question remains whether women perform certain jobs because they prefer those jobs, or because they are excluded from better-paid positions. The finding that a large part of the gender wage gap is due to differences in the jobs men and women do, suggests a greater potential role for

equal opportunity policies (Gunderson, 1989). One of the issues discussed at the European Council meeting in Nice (7^{th} - 10^{th} of December 2000) was the reinforcement of initiatives and actions designed to promote equality between men and women at work, particularly as regards pay. The organization characteristics included into our regression model did not contribute much to the explanation of the gender wage differential. Future research can concentrate more on the impact of the organization on wage differences between men and women. We were able to explain almost two thirds of the original wage difference between men and women through the integration of human-capital, job and organization variables into our regression model. We cannot rule out the possibility that part of the unexplained gender wage gap is a proxy for the effects on wages of some omitted variables, such as household responsibilities, performance of men and women in specific jobs, etc.

With respect to the second research question "Do earnings differences between men and women increase with hierarchical level", the figures teach us that the wage gap increases when one is climbing the hierarchical ladder. The wage gap is largest on management level. Compensation mostly is object of negotiation on higher hierarchical levels, while sectoral job classifications are often used as a basis for compensation issues on lower levels. In other words there is more room for negotiating one's salary the higher one climbs in the organizational hierarchy. Women seem to have a weaker position in negotiations, partly because of their lower pay expectations.

Thirdly, we concluded that women start with a pay handicap compared to men, and they are even building up an increasing pay disadvantage in their further career. Gender differences in starting salaries can be quite consequential over time. Since merit raises are often added into base salary, an initial gender difference is compounded over the years. Also career interruptions have a continuous negative impact on women's wages (e.g., seniority-based pay). Rubery et al. (1997) already detected the advantages and disadvantages of different payment systems for women. Future research can focus on women's and men's perceptions of justice of several reward systems. Another research suggestion concerns the survey design. Instead of

using a cross-sectional design, it could be interesting to do a longitudinal survey and compare the wages of the same group of workers (men and women) at different moments in their career.

References

Albrecht, J.W., Edin, P.A., Sundström, M., & Vroman, S.B. (1999). Career interruptions and subsequent earnings. *The Journal of Human Resources*, 34, 294-311.

Arrow, K. (1973). Higher education as a filter. *Journal of Public Economics*. 2 (2). 193-216.

Ashraf, J. (1996). Is gender pay discrimination on the wane? Evidence from panel data, 1968-1989. *Industrial & Labor Relations Review*. 49 (3). 537-547.

Baxter, J. & Wright, E.O. (2000). The glass ceiling hypothesis. *Gender & Society*. 14 (2). 275-295.

Benschop, Y. (1996). *De mantel der gelijkheid: gender in organisaties*. Van Gorcum Assen.

Blau, F. (1977). *Equal pay in the office*. Lexigton Books, MA.

Booth, A.L., Francesconi, M. & Frank, J. (1998). Glass ceilings or sticky floors? *Discussion paper Center for Economic Policy Research*. N° 1965.

Brett, J.M. & Stroh, L.K. (1999). Women in management. How far have we come and what needs to be done as we approach 2000? *Journal of Management Inquiry*. 8 (4). 392-399.

Brown, C. & Medoff, J. (1989). The employer-size wage effect. *Journal of Political Economy*. 97 (5). 1027-1059.

Castro, I.L. (1997). Worth more than we earn. *National Forum*, 77, 17-22.

Chauvin, K.W. & Ash, R.A. (1994). Gender earnings differentials in total pay, base pay, and contingent pay. *Industrial and Labor Relations Review*, 47 (4). 634–650.

Collins, L.H., Chrisler, J.C. & Quina, K. (1998). *Career strategies for women in academe*. Sage Publications. Thousand Oaks.

Davidson, M.J. & Burke, R.J. (1994). *Women in management: current research issues*. Chapman London.

Duncan, G.J., & Hoffman, S. (1978). On-the job training and earnings differences by race and sex. *The Review of Economics and Statistics, 61*, 594-603.

Duncan, K.C., & Prus, M.J. (1992). Starting wages of women in female and male occupations: a test of the human capital explanation of occupational sex segregation. *Social Science Journal, 29*, 479-494.

European Foundation for the Improvement of Living and Working Conditions (2001). *Gender perspectives – annual update 2000*. http://www.eiro.eurofound.ie/2001/03/updates/

Fields, J. & Wolff, E.N. (1995). Interindustry wage differentials and the gender wage gap. *Industrial and Labor Relations Review*. 49 (1). 105-120.

Fuller, R. & Schoenberger, R. (1991). The gender salary gap: Do academic achievement, internship experience, and college major help to explain the gender gap in starting salaries? *Social Science Quarterly*. 72 (4). 715-727.

Gerhart, B. (1990). Gender differences in current and starting salaries: the role of performance, college major, and job title. *Industrial and Labor Relations Review*. 43 (4). 418-433.

Glebbeek, A.C. (1993). *Perspectieven op loopbanen.* Assen: Van Gorcum.

Graham, M.E., Hotchkiss, J.L. & Gerhart, B. (2000). Discrimination by parts: a fixed-effects analysis of starting pay differences across gender. *Eastern Economic Journal*. 26 (1). 9-28.

Groshen, E.L. (1991). The structure of the female-male wage differential. *Journal of Human Resources*. 26 (3). 457-472.

Gunderson, M. (1989). Male-female wage differentials and policy responses. *Journal of Economic Literature*. 27 (1). 46-72.

Hajnal, I. (1995). *Weight 2.1 voor Windows*, Leuven: Centrum voor Dataverzameling en Analyse.

Hartog, J. (1986). Earnings functions: beyond human capital. *Applied Economics*, *18*, 1291-1309.

Hodson, R. & England, P. (1986). Industrial structure and sex differences in earnings. *Industrial Relations*. 25 (1). 16-32.

Holzer, H. (1990). The determinants of employee productivity and earnings. *Industrial Relations, 29*, 403-421.

Katholieke Universiteit Leuven (2001). Website with number of student applications. http://www.kuleuven.ac.be/studinfo/

Milkovich, G.T., & Newman, J.M. (1999). *Compensation.* Boston: Irwin McGraw-Hill.

Mincer, J. (1993). Human capital and earnings. In Mincer J. (Ed.), *Studies in human capital.* Brookfield: Edward Elgar.

Monk-Turner, E. & Turner, C.G. (2000). The relative pay of men and women in South-Korea. *Journal of Asian Economics*. 11 (2). 223-237.

Nationaal Instituut voor Statistiek (1999). *Labor force survey.*

Nollen, S.D., & Gaertner, K.N. (1991). Effects of skill and attitudes on employee performance and earnings. *Industrial Relations, 20*, 435-455.

Pfeffer, J., & Davis-Blake, A. (1990). Determinants of salary dispersion in organizations. *Industrial Relations, 29*, 38-57.

Polachek, S.W. (1987). Occupational segregation and the gender wage gap. *Population Research and Policy Review, 6*, 47-67.

Rijksdienst voor de Sociale Zekerheid (2000). *Number of private sector employers and employees, registrated in Social Security at 31/03/00.*

Roos, P.A. (1981). Sex stratification in the workplace: male-female differences in returns to occupation. *Social Sciences Research*. 10 (3). 195-224.

Rosenbaum, J.E. (1980). Hierarchical and individual effects on earnings. *Industrial Relations*, 19, 1-14.

Rose, S. & Danner, M.J.E. (1998). Money matters. The art of negotiation for women faculty. In: Collins, L.H., Chrisler, J.C. & Quina, K. *Career strategies for women in academe.* Sage Publications. Thousand Oaks. 157-186.

Rubery (1995). Performance-related pay and the prospects for gender pay equity. *Journal of Management Studies.* 32 (5). 637-653.

Rubery, J., Bettio, F., Fagan, C., Maier, F., Quack, S. & Villa, P. (1997). Payment structures and gender pay differentials: some societal effects. *The International Journal of Human Resource Management.* 8 (3), 131-149.

Seghers, N. & van der Hallen, P. (1994). *Functieclassificatie: supernova of uitdovende ster?* Hoger Instituut voor de Arbeid. Leuven.

Sels, L., & Overlaet, B. (2000). *Lonen in Vlaanderen.* Leuven: ACCO.

Sels, L., Overlaet, B., Welkenhuysen-Gybels, J., Gevers, A., 2000, The relative importance of individual, job-related and organizational characteristics in explaining differences in earnings, *Research Report 0038,Department of Applied Economics,* KULeuven.

Solberg, E. & Laughlin, T. (1995). The gender pay gap, fringe benefits, and occupational crowding. *Industrial & Labor Relations Review.* 48 (4). 692-709.

Spence, M. (1974). *Market signaling: Information transfer in hiring and related screening processes.* Cambridge: Harvard University Press.

Springael, L., De Graeve, D., Nonneman, W., De Wit, W., Meeusen, A., Merckx, I., Pareit, S. & Van Woensel, T. (1998). Bezoldigingen van alumni Toegepaste Economische Wetenschappen en Handelsingenieur, *Economisch en Sociaal Tijdschrift.* 52 (4). 585-608.

Strober, M. (1990). Human capital theory: implications for HR managers. *Industrial Relations, 29,* 214-239.

Stuhlmacher, A.F. & Walters, A.E. (1999). Gender differences in negotiation outcome: a meta-analysis. *Personnel Psychology.* 52 (3). 653-678.

Swaffield, J. (2000). Gender, motivation, experience and wages. *Working paper Centre for Economic Performance.* London School of Economics and Political Science.

Thurow, L.C. (1975). *Generating inequality. Mechanisms of distribution in the U.S. economy.* Basic books, New York.

Van der Wiel, H.P. (1999). Loonverschillen tussen bedrijfstakken. *ESB.* 84 (4210). 492-494.

Van Haegendoren, M. (1998). *Vrouw en management.* Steunpunt Women's Studies Diepenbeek.

Weiss, A. (1995). Human capital versus signalling explanations of wages. *Journal of Economic Perspectives, 9,* 133-154.

Williams, N. (1991). Re-examining the wage, tenure and experience relationship. *The Review of Economics and Statistics.* 73 (3). 512-517.

APPENDIX

The job characteristics '*responsibility in the job*', '*autonomy*' and '*degree of complexity*' are the results of a personal assessment by the respondents. A battery of items was put to respondents in the questionnaire, each of which had to be evaluated on a four-point scale (ranging from disagree completely to agree completely). The three variables responsibility, autonomy and complexity are composed on the basis of a factor analysis (varimax rotation method). The factor loadings are presented in the table. Following a reliability analysis, three ten-point scales were constructed on the basis of these items, which show the degree of responsibility, autonomy and complexity as assessed by the respondent.

Factor analysis on items concerning responsibility, complexity, and autonomy (n = 20121)

	Factor loadings		
	Responsibility	Complexity	Autonomy
I have a good deal of responsibility for other people's work	.819		
I often have to take decisions in which a mistake could have expensive or serious consequences	.702		
I carry a good deal of responsibility for the future of others	.708		
I carry a good deal of responsibility for the functioning of a department or team	.798		
Much of my work is routine		-.640	
My work consists almost entirely of difficult tasks		.688	
My job demands a high degree of skill		.720	
My job demands that I constantly learn new things		.743	
My superior is constantly looking over my shoulders			.698
I can decide for myself how I do my work			-.793
My working method is largely prescribed			.753
I decide for myself when I carry out a task			-.723
My work rate is imposed entirely by others			.675
Reliability analysis (Cronbachs alpha)	.7784	.6772	.7815